

We claim:

1. A ventilation flow control unit comprising:

a plenum;

a flow controller mounted to said plenum; and

a flow sensor mounted to said plenum.

2. A ventilation flow control unit according to Claim 1, wherein said sensor is mounted in a duct section fixed between said plenum and said flow controller.

3. A ventilation flow control unit according to Claim 1, further comprising an isolation valve fixed to said plenum to selectively block the flow of air between said plenum and said flow controller.

4. A ventilation flow control unit according to Claim 3, wherein the leakage of said isolation valve is no more than one percent.

5. A ventilation flow control unit according to Claim 3, wherein said isolation valve comprises a damper.

6. A ventilation flow control unit according to Claim 5, wherein said damper is a fixed blade damper.

7. A ventilation flow control unit according to Claim 1, further comprising a thermal coil fixed to said plenum, for affecting the temperature of air passing through said ventilation flow control unit.

8. A ventilation flow control unit according to Claim 7, wherein said thermal coil is mounted to an open end of said plenum opposite said flow controller.

9. A ventilation flow control unit according to Claim 8, wherein at least one fluid line of said thermal coil is mounted to said plenum.

10. A ventilation flow control unit according to Claim 9, further including an automatic valve connected with said at least one fluid line.

11. A ventilation flow control unit according to Claim 10, further comprising a protection bracket mounted to protect said automatic valve from damage during transportation and installation of said ventilation flow control unit.

12. A ventilation flow control unit according to Claim 11, wherein said protection bracket includes:

- a base defining an opening to facilitate the passage of a valve stem;
- a first riser extending from a first edge of said base; and
- a second riser extending from a second edge of said base opposite said first edge.

13. A ventilation flow control unit according to Claim 7, wherein said plenum is insulated.

14. A ventilation flow control unit according to Claim 1, further comprising an electrical disconnect.

15. A ventilation flow control unit according to Claim 14, wherein said electrical disconnect is mounted on said plenum.

16. A ventilation flow control unit according to Claim 14, further comprising a voltage converter electrically coupled to receive electrical power from said disconnect, for converting a first voltage received from said disconnect to a second lower voltage.

17. A ventilation flow control unit according to Claim 16, wherein said converter provides low voltage to said flow controller.

18. A ventilation flow control unit according to Claim 17 wherein:

said flow control unit further includes a thermal coil with at least one automatic fluid valve; and

said converter provides low voltage to said automatic fluid valve.

19. A ventilation flow control unit according to Claim 16 wherein:

said flow control unit further includes a thermal coil with at least one automatic fluid valve; and

said converter provides low voltage to said automatic fluid valve.

20. A method of installing a ventilation flow control unit comprising:

assembling a flow control unit by mounting a flow controller to a duct, and mounting a flow sensor to said duct; and

installing said assembled flow control unit in a ventilation system.

21. A method of installing a ventilation flow control unit according to Claim 20, wherein

said step of assembling said flow control unit further includes mounting an isolation valve to said duct to selectively block the flow of air between said duct and said flow controller.

22. A method of installing a ventilation flow control unit according to Claim 20, wherein

said step of assembling said flow control unit further includes mounting a thermal coil to said duct.

23. A method of installing a ventilation flow control unit according to Claim 22, wherein

said step of mounting a thermal coil to said duct includes securing at least one fluid line of said thermal coil to said duct.

24. A method of installing a ventilation flow control unit according to Claim 23, wherein said step of mounting a thermal coil to said duct includes mounting an automatic valve in said fluid line.

5 25. A method of installing a ventilation flow control unit according to Claim 24, wherein said step of mounting an automatic valve in said fluid line includes mounting a protective bracket around said automatic valve.

10 26. A method of installing a ventilation flow control unit according to Claim 20, wherein said step of assembling said flow control unit further includes mounting an electrical disconnect to said duct.

15 27. A method of installing a ventilation flow control unit according to Claim 26, wherein said step of assembling said flow control unit further includes mounting an electrical converter to said duct for converting a voltage from said electrical disconnect to a second lower voltage.

20 28. A method of installing a ventilation flow control unit according to Claim 20, wherein said step of assembling said flow control unit further includes:

mounting a thermal coil to said duct; and

mounting an isolation valve to said duct, said isolation valve selectively blocking the flow of air between said duct and said flow controller.

25 29. A method of installing a ventilation flow control unit according to Claim 28, wherein said step of assembling said flow control unit includes mounting an electrical disconnect to said duct.

30 30. A method of installing a ventilation flow control unit according to Claim 29, wherein said step of assembling said flow control unit includes mounting an electrical converter to said duct.

31. A method of installing a ventilation flow control unit according to Claim 30, wherein said step of assembling said flow control unit includes electrically coupling said flow controller to said electrical converter.

5 32. A method of installing a ventilation flow control unit according to Claim 30, wherein said step of assembling said flow control unit includes:

mounting an automatic valve to a fluid line of said thermal coil to control the flow of fluid through said fluid coil;
electrically coupling said automatic valve to said electrical converter.

10 33. A method of installing a ventilation flow control unit according to Claim 32, wherein said step of assembling said flow control unit includes electrically coupling said flow controller to said electrical converter.

15 34. A ventilation flow control system comprising:

a first flow control unit for controlling the flow of air into a room, said first flow control unit including a duct, a flow controller mounted to said duct, and a sensor mounted to said duct;
a second flow control unit for controlling the flow of air out of said room, said second flow control unit including a duct, a flow controller mounted to said duct, and a sensor mounted to said duct; and
a control unit for receiving feedback signals from said sensors and providing control signals to said flow controllers.

20 35. A ventilation flow control system according to Claim 34, wherein said first flow control unit further includes a thermal coil mounted to said duct of said first flow control unit.

25 36. A ventilation flow control system according to Claim 34, wherein at least one of said first and second flow control units includes an isolation valve.

37. A ventilation flow control system according to Claim 35, wherein both of said first and second flow control units include an isolation valve.

38. A ventilation flow control system according to Claim 34, wherein at least one of said first and second flow control units include an electrical disconnect.

39. A ventilation flow control system according to Claim 38, wherein said at least one of said first and second flow control units further includes an electrical converter for converting a voltage from said electrical disconnect to a lower voltage.

40. A ventilation flow control system according to Claim 34, further comprising a third flow control unit for controlling the flow of air out of said room, said third flow control unit including a duct, a flow controller mounted to said duct, and a sensor mounted to said duct.

41. A ventilation flow control system according to Claim 40, wherein said control unit receives feedback signals from and provides control signals to said third flow control unit.

42. A ventilation flow control system according to Claim 41, wherein:

said first flow control unit is mounted in an air supply duct;

said second flow controller is mounted in an air return duct; and

said third flow control unit is mounted in an exhaust duct.